

FLINT (A.)

Alimentation in Disease





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ART. I.—*Alimentation in Disease.* By AUSTIN FLINT,
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&c., &c.

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CHOMEL, in his admirable treatise on General Pathology, defines the art or the practice of medicine to be the application of good sense to the treatment of diseases. He adds that knowledge of diseases is indispensable, but good sense ranks first in importance. I give the literal translation of the French term, in preference to

the phrase "common sense" which is generally used with us, inasmuch as good sense is rather uncommon than common. This definition by Chomel is not less just than striking. The ablest practitioners in the different departments of medicine have always been those who, in addition to an abundance of knowledge, possessed in an uncommon degree good sense. This is as true now as hitherto. How often do practitioners, by no means deficient in medical knowledge, fail in practice because they lack good sense! and, on the other hand, good sense often compensates to a considerable extent for deficiency in medical knowledge. The great improvement which has taken place within the last quarter of a century in the practice of medicine, as regards the employment of remedies, and, still more, the hygienic management of diseases, is due not less to the agency of good sense than to pathological researches. Good sense restrains the formation or adoption of baseless speculations and immature doctrines; it prevents one-sided and extreme views; it opposes alike presumptuous innovations and bigoted conservatism; it keeps within proper bounds reliance upon others and self-reliance, discouraging equally blind partisanship and dogmatic egotism; and, finally, good sense is the true genius of medical experience. With these preliminary remarks I proceed to submit to the good sense of those whom I address some considerations relating to an important subject in practical medicine, namely, *Alimentation in Disease*.

As conducive to a proper appreciation of the importance of alimentation in disease, the natural history of

starvation is to be considered. The immediate effects of starvation are, of course, most rapidly produced and most strikingly manifested when all aliment is withheld. The blood is notably diminished and impoverished; emaciation is rapidly progressive, and death, according to the painful experiments of Chossat on inferior animals, takes place when the body has lost one fifth or one fourth of its weight in health. The more obvious phenomena attendant on these immediate effects are as follows: Febrile movement frequently occurs, although the temperature of the body is greatly reduced before death; muscular debility is speedily a marked symptom, and is soon followed by great prostration; the circulation is more and more enfeebled; there is inability to sleep; the moral sentiments are perverted, and, after a time, there is delirium which is sometimes active and sometimes passive; diarrhœa often occurs, and the breath becomes intolerably fœtid. The average duration of life, the complete deprivation of aliment being understood to include water, varies from five to eight days. The mode of dying is typical of slow asthenia or exhaustion. The phenomena are essentially the same, but the duration of life is considerably longer, if water be not withheld.

The phenomena of starvation are not confined to cases in which there is complete deprivation of aliment. This is a fact highly important in its bearing upon alimentation in disease. Starvation is produced whenever the aliment is insufficient, either as regards quantity or quality, for repairing the losses which the blood sustains in supplying to the solids materials for nutrition. The

phenomena of starvation are essentially the same as when all nourishment is withheld; the only difference being that they are developed more or less slowly, they are consequently less striking, and their connection with deficient alimentation is liable to be overlooked. Another fact relating to starvation also has an important bearing on alimentation in disease—certain portions of the body may suffer from the want of materials in the blood proper for their nutrition, while other portions of the body are sufficiently nourished. To quote the language of the author of an able essay on “Army Alimentation :” “Starvation is a comparative phrase. We can starve muscle by withholding nitrogen. We can starve the fats of the body, and destroy the animal heat, by withholding carbon. So, too, we can starve the brain by withholding phosphorus ; and starve the blood by failing to supply it with those salts of lime, potash, soda, iron and magnesia, which are essential to its healthy condition.”*

Recognizing the fact that the term starvation comprehends all degrees of innutrition between the extreme degree produced by the deprivation of all aliment, and the opposite extreme caused by a slight diminution of the alimentary supplies requisite for the wants of the body ; and, also, that certain parts may be starved while other parts are amply nourished, I proceed to state another fact, the practical bearing of which on alimentation in disease will be at once apparent. Starvation

* Dr. S. B. Hunt, *vide* Sanitary Memoirs of the War of the Rebellion, Vol. i, of the series published by the U. S. Sanitary Commission.

may be produced in persons affected with different diseases, as well as in healthy persons. There is nothing in disease to prevent starvation or its immediate effects. Starvation is sure to occur in cases of disease, in a degree proportionate to the lack of material for nutrition in the blood; in other words, in proportion as the requisite amount of aliment is either not ingested or not assimilated. The immediate effects and the attendant phenomena are the same when starvation occurs in connection with disease, as when it is produced in persons previously in health. Impoverishment of the blood, emaciation, febrile movement followed by a reduction of the animal temperature, feebleness of the circulation, vigilance, perversion of the moral sentiments, delirium, diarrhœa, and fœtor of the breath—may be attributable, in cases of disease, to starvation. In connection with all diseases, more or less of the morbid phenomena present arise from starvation, and these phenomena are prominent and grave in proportion to the degree in which either alimentation or assimilation is defective. Chossat has enunciated truths in language which enforces their importance, when he says, “Starvation is a cause of death, marching silently in front with every disease in which alimentation falls below the natural standard. It reaches its natural termination sometimes sooner and sometimes later than the disease which it covertly accompanies; and it may supersede the disease of which, at first, it was merely an incidental element.” Starvation is often the immediate cause of death, when diseases destroy life by slow asthenia or exhaustion. If a fatal termination be not due to a direct interference

with the action of the heart, or with respiration, it is correct to say, that patients die because they are starved to death. Certain it is that diseases which do not compromise directly the function of either the heart or lungs, cannot kill so long as the nutrition of the body is maintained at a point compatible with life. Starvation, associated with disease, may be inevitable; that is, the disease may involve an insuperable obstacle to either the ingestion of aliment, or its assimilation. Then it is that, in the language of Chossat, inanition may reach its termination sooner than the disease. On the other hand—and here is a fact full of practical import—starvation may not be a necessary effect of the existing disease, but may be due to insufficient alimentation. In such cases, inanition may prove a cause of death when the disease need not have destroyed life; the patient, indeed, may die of starvation notwithstanding the progress of the disease *per se* be favorable. Then, in the language of Chossat, inanition “reaches its natural termination later than the disease which it covertly accompanies, and it may supersede the disease of which, at first, it was merely an incidental element.”

On these facts pertaining to starvation, rest the practical considerations relative to alimentation in disease, which I shall now proceed to submit.

A logical inference from these facts is, that to prevent starvation is of fundamental importance in the practice of medicine. The importance of this object in the treatment of individual cases of disease, is to be estimated by the amount of impending danger from starvation as an incidental element. All who hear me

are doubtless familiar with the teachings of Graves, with respect to alimentation in the continued fevers. Graves states that he was first led to appreciate the importance of giving nutritious food in cases of fever, by the remark of a shrewd country practitioner, who said that, in his practice, patients generally recovered if he could prevent them from being starved to death. Graves inaugurated a great reform in the treatment of fevers as regards alimentation; and as proof of the strong conviction in the mind of this distinguished clinical teacher of the improvement in practice which dates from his publications, he is said by his co-worker Stokes to have declared that he could desire no better epitaph than, "He fed fevers!" Few, if any, practitioners at the present day, are disposed to undervalue the importance of alimentation in the essential fevers; but it is not less important to prevent, if possible, death from starvation in all other diseases. If to die by slow asthenia be often virtually to starve to death, then, no matter what the disease may be, it is an object of fundamental importance to promote, as far as practicable, the assimilation of food. Looking at the object of treatment in another point of view, it is customary to say that the powers of life are to be supported in proportion to the danger of death by asthenia, whatever be the nature or seat of the disease. Now, of supporting measures, alimentation holds the front rank, not deprecating the importance of stimulants, especially alcoholics, which it is foreign to my present purpose to discuss.

Admitting the fundamental importance of alimenta-

tion in the treatment of diseases, the inquiry arises, what are its limitations? In answer to this inquiry, it is to be stated, that, if we except the early stage of some acute diseases in which it may be an object to withhold aliment with an indirect reference to depletion, there is never any risk of hyper-nutrition. With the exception just stated, I submit the proposition that it is always desirable, in cases of disease, to supply aliment to the fullest extent of the capacity of the organism for appropriation. In acute diseases the failure of the vital powers is forestalled in proportion as nutritive supplies are assimilated. This is simply saying that the assimilation of nourishment is indispensable for the preservation of the powers of life. And then, in the progress of an acute disease, more or less failure of the vital powers ensues, the more nutrition can be maintained, the more efficient the support. The proposition just submitted embraces not only the acute but the chronic diseases. No matter what may be the seat or the nature of the chronic affection, a diet fully up to the capacity of the organism for nutrition promotes recovery, if recovery be possible, and if recovery be not possible, by increasing the ability of the system to endure the affection, contributes to prolong life. The limitations to alimentation, therefore, relate wholly to the physiological processes which are preliminary to nutrition, namely, digestion and the other processes by which aliment is converted into blood. If more food be ingested than the digestive organs can prepare for assimilation, or if the articles of diet be not suited to the digestive powers, the nutrition will not be in pro-

portion to the alimentation, and disorder of the digestive organs may be produced. This is, of course, if possible, to be avoided ; yet, the harm resulting from over-alimentation is generally exaggerated. Undigested aliment often passes through the alimentary canal without causing any appreciable disturbance. The disorder which may be produced is due chiefly to chemical changes in the ingesta, and is manifested by flatulence, pain, and looseness of the bowels. Conservatism is seen here as in other morbid effects. As the result, the offending matter is expelled, and the harm is, in general, not more than that caused by a cathartic or laxative. It is quite superfluous to say that to avoid over-alimentation may be highly desirable, but it is sometimes safer to incur risk in that direction, than to limit alimentation below the ability of the digestive powers and the capacity of the organism for nutrition. What rules are to govern the practitioner in so regulating alimentation in disease as to avoid the evils, on the one hand, of starvation, and, on the other hand, of disorder of the digestive organs ? To treat of the numerous topics which this question opens up, is impossible within the limits of a brief discourse. In the few moments remaining of the time to which I have restricted myself, I can only submit, without discussion, some of the considerations suggested by the question. An unwillingness to presume upon the patience of my auditory must be my apology for offering statements open to criticism on the score of their having the character of aphoristic propositions.

As the first in rank of supporting measures in the

management of the essential fevers and all acute diseases which endanger life by asthenia, it is often necessary to regulate alimentation without regard to indications afforded by appetite or taste. In many cases of disease, owing to bluntness or perversion of the mental perception, the wants of the system as regards nutrition are not indicated by a desire for food, or by choice in its selection and preparation. Patients not infrequently die of starvation without having experienced any sense of hunger. Under such circumstances, the rule is to supply, not only as much aliment as the digestive organs can prepare for assimilation, but food containing, in proper amounts, all the alimentary principles required to repair the waste of the different parts of the organism. Limiting alimentation to an article of food inadequate as regards the different alimentary principles which it contains, will not prevent starvation, no matter how abundantly the article is ingested. For example, patients may be starved to death on the juice or a decoction of beef given without stint and digested. The risk of starvation is much greater if the diet be restricted to substances less nutritious, such as gelatine, albumen, starch, or gum. The valuable experiments of Hammond and others have established the fact that the last three of these alimentary principles, namely, albumen, starch, and gum, singly, are wholly inadequate to nutrition; and the inadequateness of gelatine was long ago settled by the famous Gelatine Commission in Paris. Under the circumstances stated, the diet should not only embrace the requisite variety of alimentary principles, but food must be given in a concentrated and liquid

form. Milk, *par excellence*, has these recommendations, and is, therefore, of all articles of diet, in fevers and other acute diseases, to be preferred. The alimentation is rendered more effective by the addition to milk of a farinaceous substance, and by alternation with animal broths, or the essence of meat. Eggs, also, form an excellent article of supporting diet, owing to the fact that they contain the requisite variety of alimentary principles combined by the hand of nature. Whenever alimentation is a measure of support, that is, whenever there is danger, either immediate or remote, from starvation, an important rule is to allow always, after food has been given, a sufficient period to judge whether or not it produces disorder of the digestive organs. The intervals should be from three to four hours. If food be given every hour or half hour, as is often done, the organs of digestion have no period of rest, and it is impossible to form any judgment concerning the digestive powers. Moreover, after intervals sufficient to allow of rest, food is more likely to be digested. A grave objection to giving food after very short intervals, is that it involves interference with sleep and occasions both physical and mental annoyance. By allowing sufficient intervals the quantity of food may be graduated to the digestive powers, and thus disorder from over-alimentation avoided.

An important rule of alimentation in fevers and acute diseases, relates to variation in the articles of diet and in the preparation of food. Any article, prepared in a certain mode, and given, without change, day after day, becomes, after a short time, offensive and disgust-

ing. The patient takes it, not merely with indifference or against inclination, but with strong aversion ; and this is an evil, not alone on the score of difficulty and annoyance in giving nourishment, but because, under these circumstances, the digestive organs, as well as the palate, rebel against it. Variations may be made by giving, on successive days, the decoction or juice of different kinds of meat; by adding to milk different farinaceous substances, and by different modes of preparation. This rule, like most other dietetic rules, will not be carried out unless the practitioner be precise and enter into minute details in his directions concerning alimentation. Persons upon whom devolves the nursing of the sick, often attach little importance to the diet; they are apt to imagine that everything depends on remedies. The physician not infrequently meets with opposition to his measures of alimentation, arising from a prejudice against feeding patients. It has been a popular notion that starvation, so far from being the mode in which diseases are apt to kill, is a means of cure. Like other popular notions concerning diseases, this doubtless was derived from the medical profession. It is but a short time since the *cura famis* was relied upon in the treatment of most of the acute and many of the chronic diseases. Notions thus derived are often retained in the popular mind long after they have been abandoned by the profession. The introduction by enema of aliment, when it is not retained by the stomach, is often highly important.

Whenever patients desire certain articles of food, as a rule, these are to be allowed. Such a desire, if dis-

tinct, represents generally a want of nutrition, more reliable than the judgment of the physician as to the articles best suited to the case. Every one has heard of instances in which patients have craved articles of food considered as extremely inappropriate, but the cravings being indulged, perhaps without the sanction of the physician, marked improvement immediately followed. Remarkable instances of this kind are undoubtedly authentic, and they are striking illustrations of the soundness of the rule just stated. This rule is in conflict with a popular notion, for the origin of which the profession is doubtless responsible, namely, that in cases of disease the instinctive desires are morbid, and are to be opposed rather than indulged.

Alimentation, as a measure of support, is more important in cases of disease affecting the young and the aged, than during the intervening periods of life. This is consistent with the fact that starvation kills children and old persons more quickly than those who have attained to full development and who are not in advanced years. Of the 150 persons who, after the wreck of the frigate *Medusa*, were exposed on a raft for thirteen days, with hardly any food, children, young persons, and the aged, were the first to die from starvation.*

During convalescence from fevers and other acute diseases, the ordinary articles of solid food should be allowed, as soon as they are desired. Convalescence is protracted by the continuance of a liquid diet, and by

* *Physiology of Man*, by A. Flint, Jr., vol. ii, page 16.

an insufficient alimentation. The kinds of food may, in general, be safely left to the choice of the patient, and the quantity is to be graduated by the activity of the digestive powers and of nutrition. The risk of over-alimentation during this period is often exaggerated; and, with reference to alimentation, as well as to other measures, it is to be considered that after many diseases, for examples, the continued fevers and pneumonia, the liability to relapse is exceedingly small.

In the management of chronic diseases, measures aside from alimentation, whether medicinal or hygienic, are serviceable in proportion as they contribute to digestion and nutrition. Whatever be the nature of the chronic disease, or wherever it be seated, it is always an object of fundamental importance to keep nutrition as near as possible to the standard of health. The rules of alimentation, therefore, in cases of chronic disease relate to the most efficient means of effecting this object.

Medicines not infrequently impair the appetite and interfere with digestion. If not required for a special curative effect, they are then likely to do harm by compromising, more or less, alimentation and nutrition. Hence in fulfilling therapeutical indications, an important rule is to select remedies or pharmaceutical preparations which are not offensive either to the palate or the stomach. In prescribing remedies, allowance is always to be made for the wide difference among different persons as regards the gustatory and gastric sensitiveness to medicines. The over-drugging which formerly prevailed was in no small degree objectionable

on account of its effects on appetite and digestion, aside from other effects. In this aspect the use of drugs with far more discrimination and reserve now than formerly, is a great improvement ; so, also, is the use of concentrated remedies, the preparation of medicines in agreeable forms, and the hypodermic administration of certain articles.

Efficient alimentation in cases of chronic disease is often impeded by prevalent popular errors. The notion that starvation is a means of cure, to which allusion has already been made, operates largely against an analeptic diet. Another popular notion is that the restriction of diet to a very few articles, and to the same articles continuously, is desirable ; whereas, nothing is more certain than that a varied diet is most conducive to digestion and nutrition. As results of these errors it is not uncommon for persons with some chronic ailment, and even healthy persons, not only to become feeble and anæmic, but to suffer, more or less, from the blood-changes which are embraced under the name scorbutus. Chronic affections are in this way protracted, the ability of the system to bear them is impaired, and serious ailments are thereby superadded. Other absurd popular errors relate to supposed individual peculiarities. Many persons seem to be pleased with the idea that articles of diet which are wholesome for mankind in general, are pernicious to them. Practitioners daily meet with cases illustrating this strange manifestation of egotism. How often do we hear the trite saying that "what is one man's meat is another man's poison," a maxim which has very little foundation in truth. I suppose every

one present has often met with objections to milk and eggs, which, as representing all the constituents of the organism, may be called the typical foods, on the ground that they are apt to promote biliousness! It will be a great gain, as regards alimentation in chronic diseases, when these and other errors of the same sort, are completely eradicated from the popular mind.

It is highly important to consider the influence of the mind on appetite and digestion, and thereby on assimilation and nutrition. Not a small number of the disorders referable to impoverishment of the blood and innutrition are traceable to mental depression, which sustains to various disorders the relation of both cause and effect. Hence, in great part, the advantage, in many cases, of change of scene and new associations, the benefit being derived through the mind. Hence, the greater success of those physicians who take proper cognizance of the mental condition, in these cases, as compared with those whose professional offices are limited chiefly to prescribing drugs. Hence, too, the marvellous effect often of judicious encouragement, on the part of the physician, for mental depression in many cases relates to apprehensions which are either groundless or greatly exaggerated. The influence of the mind upon digestion is strikingly shown when, unhappily, patients have fallen into the habit of concentrating the attention upon the sensations which follow the ingestion of different articles of diet. If food be taken with distrust and anxiety lest it prove hurtful, the chances are it will give more or less trouble; and if

taken with a pre-conviction that it will do harm, this result will be pretty sure to follow.

Having reached the end of the time which I resolved, on commencing to write, that I would not exceed, I must leave untouched many of the topics which suggest themselves in contemplating the subject of this discourse. The few and somewhat desultory considerations which have been submitted, relate entirely to alimentation when disease exists. A kindred subject is alimentation in health, considered with reference to the prevention of disease, to the development and growth of the organism, and to mental and physical vigor. The latter is a subject large in extent and of vast importance. With regard to this subject, as well as to alimentation in disease, notwithstanding the knowledge acquired and the improvements made within late years, there is yet abundant scope for further information and progressive practical progress.

My remarks have had reference, almost exclusively, to one aspect of the subject, namely, the danger from defective alimentation, or starvation. The evil consequences of excessive and improper alimentation, both in health and disease, enter into another aspect of the subject. Considered in the latter aspect, the subject is one of magnitude and importance. Unquestionably, the evil consequences of excessive and improper alimentation are not always sufficiently appreciated by all members of the medical profession; and, with the well-known tendency in the doctrines and practice of medicine to opposite extremes, a full apprehension of the danger of defective alimentation is doubtless liable to

be followed by error in an opposite direction. Under the necessity, however, of limiting the scope of my remarks, of the two aspects of the subject I have confined myself, for the most part, to the one which, at the present time, as regards the occasion for suggestive considerations, seems to me relatively the more important.

ART. II.—*Cases and Observations relating to the Science of Toxicology and Pathological Anatomy.* By JOHN A. LIDELL, M.D., New York.

THE following cases, when considered from a medico-legal point of view, appear to possess sufficient interest, especially for the student of toxicology, to endow them with a permanent value. They are also not devoid of interest for the student of general pathology. The writer has therefore deemed it advisable to copy their histories from his note-book, and present them for publication.

CASE I.—*Acute Poisoning by Alcohol; Death in twelve hours; Autopsy.*—Joseph White, a little boy, æt. 6½ years, in good health, drank several glasses of brandy at the instigation of a man named Keneday, who was on a spree, on the afternoon of April 22d. The precise number of drinks administered to him is not known, but it is certain that the quantity was very large for so young a subject. Soon afterwards he was seen staggering along the streets, still accompanied by the man; and, a little while after this, he was carried home by the neighbors in a state of profound intoxication. His parents, supposing that sleep would do him good, placed him in bed, and left him without further care. Late in the evening, however, their attention was at-



